

Serial No.: 10/801,476

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Our Case No. 9281-4823
Client Ref. No. CK US00927

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kenichi Mitsumori

Serial No. 10/801,476

Filing Date: March 16, 2004

For:

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Examiner: Frankie L. Stinson

Group Art Unit No. 1746

RESPONSE TO OFFICE ACTION

Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

This paper is submitted in response to the Office Action of February 10, 2006.

Listings of the Claims begins on page 2

Remarks begin on page 4.

Listings of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Cancelled)

2. (Previously Presented) An ultrasonic vibrator comprising:
a vibrating portion;
a side wall portion standing on a principal surface of said vibrating portion;

and

a vibrator body disposed on the principal surface of said vibrating portion inside said side wall portion to apply ultrasonic vibration to said vibrating portion, wherein a thin portion is formed at least on a part of a border between said vibrating portion and said side wall portion.

3. (Cancelled)

4. (Previously Presented) An ultrasonic vibrator according to Claim 2, wherein a thickness of said vibrating portion is within the range of $\lambda/2 \pm 0.3$ mm, where λ represents a wavelength inside said vibrating portion of ultrasonic vibration applied from said vibrator body.

5. (Cancelled)

6. (Previously Presented) An ultrasonic vibrator according to Claim 2, wherein a frequency of the ultrasonic vibration is within the range of 20 kHz to 10 MHz.

7. (Cancelled)

8. (Withdrawn) A wet-treatment nozzle to supply a treatment liquid for wet treatment of a workpiece toward the workpiece and to discharge waste treatment liquid after the wet treatment, said nozzle comprising:

a supply pipe having, at one end, an inlet to admit the treatment liquid;

a drain pipe having, at one end, an outlet to drain the waste liquid to the outside; and

a connecting portion facing the workpiece to connect other ends of said supply pipe and said drain pipe,

wherein said connecting portion has a first opening which opens to said supply pipe and a second opening which opens to said drain pipe,

wherein a treatment region for the wet treatment that is filled with the treatment liquid is formed in a space between opposing surfaces of said connecting portion and the workpiece by supplying the treatment liquid from said first opening toward the workpiece,

wherein said connecting portion includes an ultrasonic vibrator according to Claim 2 to apply ultrasonic vibration to the treatment liquid in said treatment region, and

wherein the waste liquid from said treatment region is guided from said second opening into said drain pipe and is drained through said outlet.

9. (Cancelled)

10. (Withdrawn) A wet-treatment apparatus comprising:

a wet-treatment nozzle according to Claim 8; and

a nozzle and workpiece relatively moving means for cleaning the entire treatment region of a workpiece by relatively moving said wet-treatment nozzle and the workpiece along a surface of the workpiece.

11. (New) An ultrasonic vibrator according to Claim 2, wherein the vibrating portion and the side wall portion are integrally formed as a box.

12. (New) An ultrasonic vibrator according to Claim 2, wherein the thin portion is formed by the principal surface of the vibrating portion; and wherein the opposite side, with respect to the thin portion, of the principal surface of the vibrating portion is planar.

REMARKS

In view of the comments which follow, and pursuant to 37 C.F.R. § 1.111, reconsideration of the Office Action dated February 10, 2006, is respectfully requested by Applicant.

Summary

Claims 2, 4, 6, 8, and 10 are pending

Claims 2, 4, and 6 were rejected

Claims 8 and 10 were withdrawn

Claims 11 and 12 have been added

Rejections

Claims 2, 4, and 6 were rejected under 35 U.S.C. § 102 (b) as being anticipated by either Holden (U.S. Patent No. 2,498,737) or Scarpa (U.S. Patent No. 3,433,461).

Claim 2 recites, *inter alia*, a thin portion formed at least on a part of a border between said vibrating portion and said side wall portion. Because the thin portion is formed on at least part of the border the propagated ultrasonic vibration is partly reflected by the thin portion.

Scarpa fails to disclose a thin portion formed at least on a part of a border between a vibrating portion and a side wall portion. In contrast to Claim 2, Scarpa discloses a groove (3a) between the vibrating portion (1) and the side wall (Figure 12). The groove (3a) is not formed on at least a part of a border and is thus distinguishable from the arrangement of Claim 2. The Examiner also states that the annular ring (4) forms a thin portion on at least a part of the border. However, the ring (4) does not create a thin portion. The annular ring (4) merely takes the place of the side wall and does not create a gap that forms a thin portion. Accordingly, Claim 2 is allowable over the cited art.

Holden fails to disclose a thin portion formed at least on a part of a border between a vibrating portion and a side wall portion. In contrast to Claim 1, Holden discloses an annular groove (28) that is between main housing (1, 2) and the vibrating portion (11, 12, 13) (Figure 1). Accordingly, Claim 2 is allowable over the cited art.

Accordingly, Claim 2, as well as Claims 4 and 6, is allowable over the cited art.

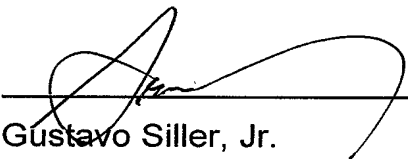
Applicants have added Claims 11 and 12. The cited art fails to disclose the arrangements of Claim 11 and Claim 12. Thus, in addition to being dependent on an allowable base claim, Claim 11 and Claim 12 are allowable over the cited art because the arrangements are not disclosed in the cited art.

Conclusion

For at least the reasons presented above, the Applicant respectfully submits that the pending claims are in condition for allowance.

The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application.

Respectfully submitted,



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